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ABSTRACT

Designed to help create effective presentations using liquid crystal display (LCD) panels, this guide contains the basic information on LCD panels, as well as suggestions on when, where and how to best use them, presented in a step-by-step procedure format. Seven topics are addressed in the guide: (1) eight steps to a successful meeting presentation; (2) advantages of LCD panel presentations; (3) how the LCD panel works; (4) when to use an LCD panel; (5) designing a presentation for LCD output, including color panels, monochrome panels, and animation; (6) planning a meeting room; including screen size, types of screens, and room arrangements; and (7) a comparison chart of various LCD presentation products. (ALF)

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LCD PANELS: VIVID PRESENTATIONS USING YOUR OVERHEAD PROJECTOR AND YOUR COMPUTER

Release the power of your computer using liquid crystal display panels and create eye-pleasing visuals that communicate with impact. This guide is designed to help you create effective presentations using LCD panels. Inside you will find basic information on LCD panels, as well as the when, where and how to best use them, presented in a simple step by step format.

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8 STEPS TO A SUCCESSFUL MEETING PRESENTATION

No matter how good your meeting facility may be or what type of audio visual aids you use, without a good presentation you are likely to undermine the other positive aspects of your meeting and, thus, its chance for success. The following guidelines are intended to help you avoid common pitfalls and introduce some fundamental communication skills which every presenter should be familiar with.

1 **Set an agenda on what the presentation will cover.** An agenda is commonly referred to as the meeting's blueprint. It is important, therefore, for a presenter to develop his or her own agenda in order to make the discussion progress as intended. The agenda can be entirely written out or, if the presenter is extremely knowledgeable on the subject matter, abbreviated as an outline. In drafting the agenda always keep in mind the importance of meeting the presentation's goals and objectives.

2 **Prepare written materials for participants.** Many times, it is effective to provide participants with handouts before your presentation. These will provide information on what you are trying to get across in the meeting and gives them something to take away for future reference. Keep the material brief and to the point—no one wants to read a huge volume about the meeting they have just attended.

3 **Develop a stage presence.** You don't have to become a seasoned performer overnight, but you should appear calm, competent and confident in front of your audience. Take time to prepare a solid presentation that you know in its entirety.

4 **Open the meeting with a brief prepared statement.** Do not put your audience to sleep right at the start with a long rambling statement. Begin with something that will grab attention. Employing a sense of humor at this point is often useful. To be assured participants will understand the subject, start with something familiar and work from there.

5 **Audio-visual aids add spark to your presentation.** *There are a variety of ways in which a presenter can graphically or visually present information to an audience. Audio-visual aids can be as simple as showing graphs or using overhead transparencies to viewing specially produced videotapes. Of course, budget constraints will govern the types of extras you will be able to add to your presentation. Simply because certain presentation aids may be more expensive, there is no guarantee they will be more effective.*

6 **Get participants involved in the presentation.** Nothing is more boring to an audience than a presenter who dominates the discussion. Encourage participation by posing open ended questions and re-directing questions aimed at you to others in the group. Do not, however, let one or several group members dominate, or let off-the-track subjects take over the discussion. You should always remain in control and direct the flow of the meeting.

7 **Correct misunderstandings quickly.** Make sure participants are comprehending the information you are relaying to them. Redefine complex terms or concepts for ease of understanding and supply necessary information that you may have inadvertently omitted earlier in the presentation. Above all else, you want to avoid having participants come away with the wrong message.

8 **Know when to close a presentation.** It is important to know when to bring your remarks to a close. Reiterate any major points to ensure that your audience knows what points you feel are most important. Making a final statement is recommended, but like an opening statement, *keep it short.*

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ADVANTAGES OF LCD PANEL PRESENTATIONS

Inexpensive, Highly Efficient and High Tech.

- Though on the cutting edge of technology, prices start at just $700 compared to large CRT monitors (35 to 37 inch) in the price range of $7000-$8000.

LCD Panels Save Time and Eliminate the Need for Transparencies.

- The computer generates all the graphics and text for your presentation.
- Save time and money. An organization generating one hundred transparencies a month at twelve dollars a piece would cover the cost of an LCD panel within several weeks with the savings.

LCD Panels Encourage Audience Interaction.

- Presenters can change screens instantly, visually demonstrating the impact of "what if" situations.
- The ability to show computer graphics and animation makes them ideal for training sessions and live demonstrations.

Panels Work With Either Apple or IBM compatible Computers.

- LCD Panels are designed to interface Apple/Macintosh and IBM compatible computer operating systems.
- The panels can display all software and data from your computer.

Lightweight and Portable.

- Typically, LCD panels weigh less than 10 pounds, including the power supply.
- Since most organizations already have overhead projectors on hand, you need only bring the LCD panel to your destination.

Bright images are projected in fully lit rooms

- Overhead projectors generate relatively bright images so there is usually no need to completely darken the room (darkened rooms contribute to inattention and drowsiness).
- The presenter is visible to the audience at all times and can maintain good eye contact.

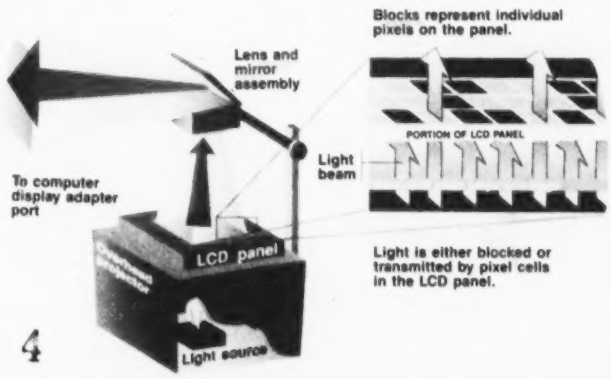
HOW THE LCD PANEL WORKS

A liquid crystal display panel is the electronic equivalent of an overhead transparency. LCD panels allow presenters to use the power of their computers in a conference setting for a relatively small cost. The Panel, which is connected through a cable to your PC, is placed on the stage of an overhead projector. The image is projected the same as a transparency.

An LCD panel is made of a metal or plastic frame that holds two pieces of glass with a thin layer of liquid crystals suspended between them. The frame contains the necessary electronic components for arranging the crystals into projectable characters and images. The panels are capable of projecting all types of data from your computer including graphs, charts, text and even animated sequences.

When choosing an overhead projector to use with your LCD panel, look for one that emits low heat. Heat from from an overhead can distort and even erase the image in the panel.

While being relatively new technology, LCD panels have seen tremendous growth in both popularity and improvements, and are the easiest and most convenient way to release information locked in your computer for viewing by an audience.


Blocks represent individual pixels on the panel.
Lens and mirror assembly
PORTION OF LCD PANEL
Light beam
To computer display adapter port
LCD panel
Light is either blocked or transmitted by pixel cells in the LCD panel.
4
Light source

FEATURES

Design and mechanics vary some by manufacturer, though most systems are quite similar. Based on your application and budget you can select a unit that best fits your needs. Features to compare are color, contrast, brightness, sharpness, refresh rate, memory and ease of use.

Color Panels

Color

Today's color panels can be broken down into two categories: active matrix and passive matrix. Active matrix panels use a single panel design while passive matrix panels use a stacked panel design. Active matrix panels are significantly more expensive than passive matrix panels. The primary differences between the two technologies that are noticeable to the user are color saturation, number of projected colors, brightness and refresh rate. Active matrix is superior in all but brightness.

Panels utilizing both technologies project true color computer images. The quality of the image may depend on a number of factors. One of the most important is the type of computer image that is being projected. If it is a simple bar chart or graphic with a low number of colors (standard VGA can only project 16 colors) then most panels do a good job. If the image is a scanned photo with hundreds or thousands of colors then the greater number of colors the LCD panel can project the better the image will look. Panels that can project a high number of colors have better blending from one shade or color to the next. Panels with fewer colors will project images with visible banding between shades or colors.

Contrast & Brightness

Color panels have relatively low transmissivity. Passive matrix panels have three LCD panels that light must pass through. Active matrix technology, even with the single panel design, have less transmissivity than passive matrix panels. Both color LCD technologies require a quality, high light output overhead projector for best results.

Refresh rate

The rate at which the LCD is internally scanned, and the image "refreshed" is known as the refresh rate. If this rate is lower than 30 Hz, the screen will flicker. The refresh rate of active matrix panels is typically 50-70 Hz. Passive matrix color panels are slower than active matrix.

Monochrome Panels

Color

There are several types of panels grouped under the heading of monochrome panels. True monochrome panels were the earliest LCD panelss. Data was projected in one color and everything else was the background color. These panels projected black on white, dark blue on light blue, or some similar combination. The next generation of panels are the grayscale panels. These panels translate colors into shades of gray to differentiate the computer image's colors. Duochrome panels followed grayscale panels and use a shade of yellow, blue or magenta rather than gray to differentiate the colors.

Contrast & Brightness

As a group, black and white LCD panels offer better contrast and brightness than grayscale or duochrome panels. Consequently they are easier to view with the lights on. However, there is a trade-off, panels that have high contrast tend to transmit less light and vice versa.

Contrast and brightness are also dependent upon the amount of light delivered by the projector. Using an overhead projector with high light output and low heat emmittence will insure your best results regardless of the type of panel you have.

Refresh Rate

Monochrome panels generally have refresh rages in the 50-60 Hz range.

Overall

Memory

Certain systems offer a memory module that can store several images and data for projection without being connected to a computer. This eliminates the need for a computer interface and increases portability and convenience.

Ease of use

Units should have conveniently placed controls, and adequate cable connectors, including a "Y" cable which will enable you to simultaneously project images on your LCD panel and on your computer monitor. Most systems also offer an optional remote control. These should have well spaced and labeled buttons and allow you to change screens, timing and contrast from anywhere in the room.

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WHEN TO USE AN LCD PANEL

Because LCD panels offer high-tech solutions to common presentation problems of cost, convenience, and effectiveness, they are useful in a wide range of situations.

Education and Training - LCD panels have proven invaluable in training centers. Instructors can illustrate a series of steps on screen with the computer while students follow along at their desks. Today, panels are being utilized at the elementary, high school and college level as well in corporate and technical training centers

Meetings - Initially, many people used LCD panels for "canned" or slide show-like presentations. But quickly their value for interactive meetings or brainstorming sessions has been realized. When used in combination with presentation and other visually oriented software, LCD panels can be an invaluable tool for consensus building and decision making.

Sales Presentations - Salespeople can carry an LCD panel and laptop computer to a sales call and use an available overhead projector for dynamic presentations that get results.

On-Line Data Analysis - A PC acts as a dumb terminal through which data from a mid-size or mainframe computer can be transmitted and then projected via the LCD panel. This is particularly effective for smaller groups (up to 40 or 50) where interaction is desired.

DESIGNING YOUR PRESENTATION FOR LCD OUTPUT

LCD panels are an exciting and rapidly growing technology that expands your capabilities and choices in presentations. However, some planning of your LCD panel presentation will be necessary to achieve effectiveness and avoid problems with data display.

Color Panels

Color Combinations

It is best to project a chart of colors prior to designing your presentation and choose the colors for use in your presentation that are the most pleasing to your eye and stand out the most. As you design the presentation pay close attention to which colors look the best next to each other and provide the best contrast between each other. If you are planning to project scanned images be sure to project them to see if your panel can do a good job of displaying them. Finally, be sure you adjust the panel for your presentation, and save these adjustments, prior to delivering it.

Animation

Passive matrix color panels will most likely not have a fast enough refresh rate to do a good job of displaying computer animation. Active matrix panels will do an excellent job of animation display.

Monochrome Panels

Color Combinations

Because of shade and color limitations, some color combinations you see on your computer terminal will appear differently when projected through an LCD panel. Reducing 256 colors available on your computer terminal to eight or sixteen shades of gray or a minimum number of pseudo colors can produce unexpected results. Some colors, in certain combination, may not appear at all.

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On some of the earliest units blue, green, and white project white while black, red and magenta project black or gray.

Careful planning of your presentation will insure that your color scheme is visible when projected.

Animation

Avoid fast animation sequences. Most monochrome LCD's do not have a fast enough refresh rate to accurately portray motion and some quick animated images on screen may appear to be blurred due to this slow motion.

Overall

Remote Controls

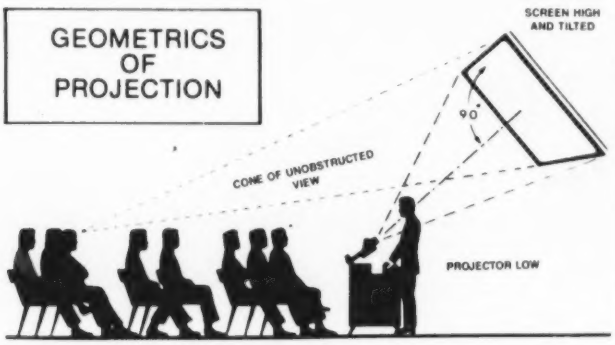
When a wireless remote control or keyboard is included with the system, inspect the remote for the number and placement of buttons and your comfort in manipulating them. Find the one that suits you best. The remote controls should allow you to control picture quality, including, contrast, brightness, and timing from anywhere in the room.

Simultaneous external monitor viewing

Make sure you have adequate cabling for the type of presentation capabilities you want. If you want the image being projected to appear simultaneously on your terminal a "Y" cable will be necessary. This may be included in your unit or it may be an optional accessory.

PLAN YOUR MEETING ROOM

It is important that everyone in your audience has a clear and unobstructed view of the projection screen. Provide a Projection Screen best suited for the size of the room and your viewing audience.

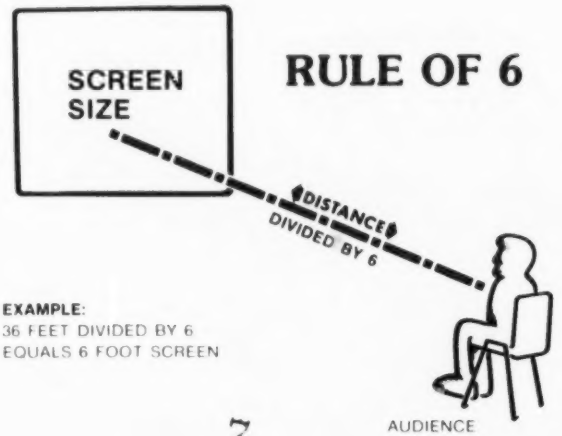


Screen Size and Seating Guide

Room Ratio Length: Width	1:1		4:3		3:2	
Minimum Screen Size	Room Size	Seating Capacity	Room Size	Seating Capacity	Room Size	Seating Capacity
40"	20 x 20'	21	20 x 15'	16	20 x 13'	10
50"	24 x 24'	33	24 x 18'	26	24 x 16'	23
60"	30 x 30'	57	30 x 22'	47	30 x 20'	41
70"	35 x 35'	82	35 x 26'	69	35 x 23'	58
84"	42 x 42'	124	42 x 33'	118	42 x 28'	90
6 x 8'	48 x 48'	167	48 x 36'	141	48 x 32'	128
7 x 9'	56 x 56'	234	56 x 42'	200	56 x 37'	182
8 x 10'	60 x 60'	272	60 x 45'	223	60 x 40'	208
9 x 12'	72 x 72'	402	72 x 54'	347	72 x 48'	318

DETERMINE THE CORRECT SCREEN SIZE

Audience size and room shape should be considered when determining the correct screen size. Projected transparencies must be readable to the person farthest from the screen. Use the Rule of 6 to determine screen size. Measure the distance from the screen to the person farthest away; divide the distance by six for the minimum screen size. For example, if the distance to the back row is 60 feet, divide 60 by 6 for the correct screen size - 10 feet. This is the screen width. However, do not use a projection screen smaller than 60"×60" with an Overhead Projector.



EXAMPLE:
36 FEET DIVIDED BY 6
EQUALS 6 FOOT SCREEN

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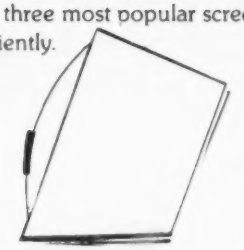
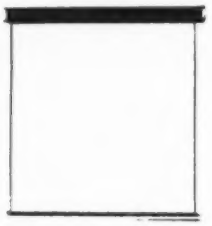
TYPES OF SCREENS

The three most popular screen types - Tecnitilt, Wall or Tripod - with a Matte White projection surface, will perform very efficiently.



- TECNITILT SCREEN - This screen was designed specifically for use with the overhead projector. The bows that support the screen travel 35 degrees upward in their mounts which eliminates the keystone effect.

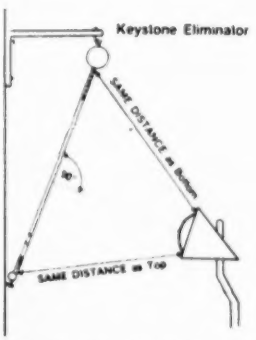


- WALL SCREENS - (Similar to window shades) can be equipped with brackets which facilitate the elimination of the keystone effect.

- PROFESSIONAL TRIPOD SCREENS - These screens are equipped with a keystone eliminating bracket.

KEYSTONING

Keystoning is a fan-shaped angular distortion resulting from unequal distance from the projector lens to the top and bottom of the screen. Keystoning results when the screen is placed much higher than the projector lens. Keystoning can be eliminated by slanting the top of the screen forward, or the bottom backward, to equalize the distance to the projector lens. Tripod screens can be purchased with an attachment or arm that allows the screen to be slanted forward at the top. This is called a "keystone eliminator." Wall screens should be mounted two or more feet away from the wall so they may be slanted back at the bottom to eliminate keystoning. Horizontal keystoning may also result from not placing the projector squarely in front of the screen.

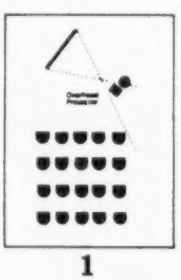


The projection screen must be at a 90 degree angle to the projector head to eliminate "keystone" distortion.

SUGGESTED ROOM ARRANGEMENTS

The room arrangements shown here provide optimum viewing for all members of the audience and can be modified for your specific situation.

1. **THEATER**
   Any size audience
2. **CONFERENCE**
   Up to 30 people
3. **THEATER**
   W/center aisle
4. **CLASSROOM**
   Up to 100 people
5. **BOARD ROOM**
   Up to 15 people
6. **DUAL PROJECTOR THEATER**
   Any size audience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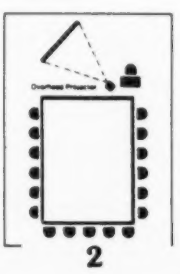
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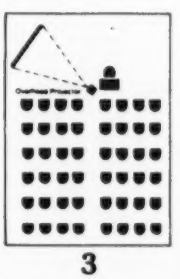
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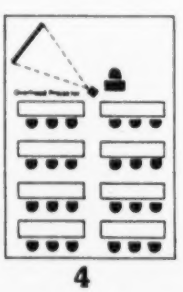
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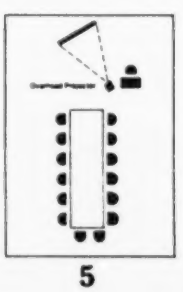
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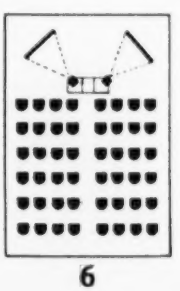
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